

# MANUFACTURING EXTENSION PARTNERSHIP

## Success Stories from the Field

### Aztec Manufacturing Corp

#### Michigan Manufacturing Technology Center

#### Lean Launches Big Savings At Aztec Manufacturing

##### Client Profile:

Aztec Manufacturing Corporation is a Tier-One producer of mid- and high-volume precision-machined castings and forgings for the automotive industry. A minority-owned business of less than 100 employees located in Romulus, Michigan, Aztec is now in its second decade. While the company is working steadily at diversifying its customer base, the Ford Motor Company is its largest customer.

##### Situation:

Aztec was already familiar with the services of Michigan Manufacturing Technology Center (MMTC), a NIST MEP network affiliate; MMTC provided Aztec with QS 9000 internal auditor training in the late 1990s, and has worked on no less than eight improvement projects at Aztec since 2001. When Aztec decided to launch a major lean initiative to qualify for a large contract bid at Ford, the company once again selected MMTC as its facilitator.

##### Solution:

MMTC provided lean manufacturing training to every Aztec employee. The company's general manager, plant superintendent, and controller took part in MMTC's intensive, three-day Lean Leadership workshop. Aztec's plant superintendent also participated in MMTC's hands-on nine-day Lean Champion series. MMTC and Aztec organized five "lean teams" to address the issues of operator instructions, set-up reduction, workplace organization, total productive maintenance, and materials. Working together, the teams incorporated a low-cost overhead conveyor into the construction of a new work cell that turns out nearly 30 percent of the company's annual sales in just 4 percent of its factory floor space. Now most changeover is performed off-line, improving productivity. Parts are coined before machining, and bushings are present and in the proper position before packaging. By employing the company's first material-handling robot, Aztec's employees improved the ergonomic conditions of their jobs.

Aztec's initiative to incorporate lean techniques with cellular manufacturing was successful when Ford competitively awarded Aztec with a redesigned part for the front suspension of its Panther platform. Aztec is to supply 300,000 left-side and 300,000 right-side parts annually.

When the new cell was launched in spring 2002, it generated a "dock-to-dock" time (Ford Lean Center's key lean metric) of just under 14 days. Based on the

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annual part volume of 600,000, that 14-day figure corresponds to a raw and finished goods inventory of about 33,000 units. Less than a year later, dock-to-dock time has been reduced to less than eight days, corresponding to an inventory of less than 14,000 units. That 14,000-unit change equates to approximately \$120,000 in one-time inventory savings. Aztec is also using overall equipment efficiency (OEE), which measures the proportion of shift time to actual production, as a metric of success. OEE has been driven from less than 50 percent to 72 percent, and the company has set a target of 85 percent as an improvement goal. The cell additionally generates less than 0.5 percent scrap and has a quality rating of 100 percent. The Panther cell also features two other aspects of lean: a visual signal to pull (or stop) production; and a prominent display of both current OEE data and workplace organization (5S) criteria. Based on the Panther cell's success, Aztec is developing two new cells on other product lines.

Aztec is so impressed by the benefits of lean manufacturing that it decided to implement a lean office initiative in each of the company's two office areas. Production supervisors, acting as auditors, make unannounced visits to each office area twice each month and score the two zones. The company recently completed a value stream map of the Engineering Change Notice (ECN) process, which was substantially modified and streamlined as a result. Aztec also sent several employees to MMTC's Progressive Manufacturing Community seminar to learn about more opportunities to implement lean transformations in the office.

### Results:

Reduced dock-to-dock time from 14 days to less than 8 days.

Incurred a one-time inventory savings of \$120,000.

Increased shop floor capacity.

Increased OEE from less than 50 percent to 72 percent.

Achieved 100 percent quality on product line.

Streamlined ECN process.

### Testimonial:

"When we start looking for help in a new area, the Michigan Manufacturing Technology Center is one of the first resources we contact. If their staff can't help us, they'll know who can."

Don Crowther, General Manager